STATE OF VERMONT
PUBLIC SERVICE BOARD

Petition of Vermont Gas Systems, Inc., requesting a Certificate of Public Good pursuant to 30 V.S.A. § 248, authorizing the construction of the "Addison Natural Gas Project" consisting of approximately 43 miles of new natural gas transmission pipeline in Chittenden and Addison Counties, approximately 5 miles of new distribution mainlines in Addison County, together with three new gate stations in Williston, New Haven, and Middlebury, Vermont	)	Docket No. 7970

VERMONT AGENCY OF NATURAL RESOURCES' RESPONSE TO PETITIONER'S FIRST SET OF DISCOVERY REQUESTS

GENERAL OBJECTIONS

A. The Agency objects to the Requests as overbroad and unduly burdensome on the grounds and to the extent they call for responses that are neither relevant to the subject matter of the pending action, nor reasonably calculated to lead to the discovery of admissible evidence.

B. The Agency objects to the Requests on the grounds and to the extent that they seek responses that are subject to any or all of the following privileges: (i) the attorney-client privilege; (ii) trial preparation privilege; (iii) executive privilege, or that are otherwise privileged or protected from disclosure.

C. The Agency objects to the Requests' Instructions and Definitions on the grounds and to the extent that they are overbroad, unduly burdensome and oppressive, purport to impose obligations on the Agency that are beyond the scope of the Public Service Board Rules or the Vermont Rules of Civil Procedure or other applicable law, cannot be produced without undue burden to the Agency and/or that require an unreasonable investigation on the part of the Agency in order to be produced, or purport to require the Agency to create documents responsive to any such Requests.

D. The Agency objects to the Requests to the extent that they seek the production of documents and information already in the possession of, or publicly available to, or readily obtainable to the Petitioner and their counsel, on the ground that with respect to such production, Petitioner's Requests are thereby rendered unduly burdensome.

E. The Agency objects to the Requests to the extent that they seek the production of documents and information in the possession, custody or control of entities other than the

Agency, on the ground that such demanded production is beyond the scope of the Public Service Board Rules or the Vermont Rules of Civil Procedure and other applicable rules and law.

F. The Agency expressly reserves the right to supplement, clarify, revise or correct any or all of the responses herein at any time. By making any response to the Requests, the Agency does not waive, and hereby expressly reserves, the right to assert any and all objections as to the admissibility of such responses into evidence at the time of trial of this action, or in any other proceeding, on any and all grounds, including but not limited to, competency, relevance, materiality and privilege. Further, the Agency provides the responses herein without in any manner express or implied admitting that the items in the Requests or in any response thereto are relevant or material to the subject matter of this proceeding.

These General Objections are made, to the extent applicable, in response to each of the Interrogatories and Requests for Production of Documents as if the objections were fully set forth therein.

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DISCOVERY REQUESTS

Q.PET:ANR.1-1. Produce all notes, field notes, emails, and photographs regarding the Project.

OBJECTION: To the extent the request seeks work product or information that is subject to the attorney-client privilege, the information is not being produced and is privileged and not discoverable. V.R.C.P. 26 (b)(1). Information that was produced by or is obtainable from the Petitioner or some other source that is more convenient, less burdensome, or less expensive is not being produced. Subject to and without waiving this objection, ANR provides the following response:

See file drop, documents produced under PET:ANR.1-1

Q.PET:ANR.1-2. Produce all communications and related documents exchanged between any representatives of ANR and EPA, CLF, VTRANS, Federal Highway Administration, the Army Corps, U.S. Fish & Wildlife Service, and any party to this proceeding, relating to this project.

OBJECTION. A, B, F. Subject to and without waiving this objection, please see file drop Documents produced under PET-ANR.1-2

Q.PET:ANR.1-3. Admit that ANR's Division of Forestry webpage at http://www.vtfpr.org/htm/forestry.cfm, states that Vermont forests cover "more than 4.6 million acres, Vermont is 75 percent forested." If denied, explain why denied.

OBJECTION: A. The request exceeds the purpose of a request to admit, does not seek the admission of a fact or the application of a fact to law, or the genuineness of a document. To the extent a response is required it is DENIED.

Q.PET:ANR.1-4. Admit that the State of Vermont owns 382,600 acres of state forestland.

OBJECTION: A.

Q.PET:ANR.1-5. Admit that the state timber harvests approximately 2 million board feet each year.

OBJECTION: A. The question is unduly vague and ambiguous or poorly drafted and it is not certain what is being asked. To the extent a response is required it is DENIED.

Q.PET:ANR.1-6. Admit that the ANR Department of Forestry 2010 Vermont Forest Resources Plan (referenced herein as the "State Action Plan"), reports at page 94 that: "It is expected that scheduled harvests from state lands will increase over the next few years as state budget constraints direct more utilization of forest receipts for management activities."

OBJECTION: A. The request exceeds the purpose of a request to admit, does not seek the admission of a fact or the application of a fact to law, or the genuineness of a document. To the extent a response is required it is DENIED

Q.PET:ANR.1-7. Describe the avoidance, minimization and mitigation employed by the state to protect state significant natural communities, RINAs, wetlands and rare plants during timber harvests on state owned lands. Produce all documents relied upon, referenced or relating to same.

OBJECTION: The pending matter and the testimony of the ANR witnesses relates to the proposed 42 mile gas transmission project through Addison and Chittenden Counties. A

Q.PET:ANR.1-8. Admit that there are currently approximately 1.7 million acres of Vermont forests enrolled in the Vermont Use Value Appraisal ("UVA") program.

OBJECTION: A. The information is unduly vague and ambiguous. To the extent a response is required it is DENIED

Q.PET:ANR.1-9. Admit that ANR has adopted and published *Minimum Standards for Forest Management and Regeneration* for the UVA Program and that standards do not require foresters or landowners who timber harvest under the UVA program to avoid, minimize or mitigate harvesting operations to protect state significant natural communities, RINAs, rare plants or wetlands.

OBJECTION: A. The question is unduly vague and ambiguous. To the extent a response is required it is DENIED.

Q.PET:ANR.1-10. Admit that the ANR's Acceptable Management Practices ("AMPs") for logging operations do not require foresters to avoid, minimize or mitigate impacts to significant natural plant communities, RINAs or rare plants.

OBJECTION: A. The request is not appropriate for a request to admit. The request does not seek an admission as to "statements or opinions of fact of the application of law to fact. To the extent a response is required it is DENIED

Q.PET:ANR.1-11. Admit that ANR Land Administration Division administers state lands that contain hundreds of miles of trails and forest roads used for hiking, cross-country skiing, snowmobiling, and other trail activities, including the Long Trail, numerous VAST snowmobile trails, and segments of the Catamount Cross Country Ski Trail.

OBJECTION: A. The question is unduly vague and ambiguous. To the extent a response is required it is DENIED.

Q.PET:ANR.1-12. Identify and describe all avoidance, minimization and mitigation measures employed to reduce impacts to natural plant communities, RINAs, wetlands and rare plants on the above referenced trail networks and logging roads.

OBJECTION: A, C.

Q.PET:ANR.1-13. Provide the general widths of logging roads used to harvest timber on state lands, include the various types of logging roads (skidder trails, logging road, forestry road, haul road, access road, etc.), the associated width and any additional shoulder widths that might be cleared for road stabilization, construction, drainage or "day lighting" activities. Include the general size of the cleared area of log landings constructed along these "logging roads" to

facilitate the removal of timber from the forests.

OBJECTION: A, C. Further, the request is unduly vague and ambiguous and contains general and undefined terms including "general widths" "logging roads."

Q.PET:ANR.1-14. Admit that construction of logging roads on state lands results in earth disturbance. If denied, explain why denied.

OBJECTION: A, C. Further, the request is unduly vague and ambiguous and contains general and undefined terms including "logging roads" and "construction" To the extent a response is required it is DENIED.

Q.PET:ANR.1-15. Produce a map or other documents in the agency's possession regarding trails on state lands.

OBJECTION: A, C.

Q.PET:ANR.1-16. Identify and describe all measures employed to prevent the spread of non-native invasive species on the above referenced trail networks and logging roads.

OBJECTION: A, C.

Q.PET:ANR.1-17. For each of the ANR witnesses that have offered prefiled testimony in this matter, please identify and produce for the past 5 year period, copies of the following:

a a list of all court or administrative proceedings in which the witness has been a witness or a party;

b a detailed description of any testimony given by the witness in any court or administrative proceeding, and copies of all transcripts, prefiled testimony, exhibits, reports, and other documents relating to such testimony;

c all exhibits that may be offered in this proceeding through the witness; I will answer

OBJECTION: B. ANR is uncertain what exhibits it may offer at trial.

d a list of all publications authored in whole or in part by the witness;

e a list of all administrative and court proceedings and depositions in which the expert offered an opinion, and a detailed description of all such opinions;

f a list of all professional licenses held by the witness;

g any and all documents, reports, data, studies referenced, relied upon, or referred to in preparing their testimony or in responding to these information requests; and

h identify every landowner, municipal or public representative (including state agency personnel or representatives or consultants thereof), that the witness has communicated with relating to the Project, describe the subject and substance of such communication, and produce copies of same if written communications.

RESPONSE

Bob Popp.

a. East Avenue Loop – Pre-filed Testimony

Southern Loop – Pre-filed Testimony

b. East Ave Loop testimony addressed placement of matting in the wetlands, vegetation management protocols, R,T,E plant inventories, and Rare and Irreplaceable Natural Area designation.

Southern Loop testimony addressed impacts to R,T,E plants, vegetation management protocols, and invasive species. ANR does not have copies of the transcripts of these proceedings. The prefiled testimony is publicly available.

c. OBJECTION: B. ANR is uncertain what exhibits it may offer at trial.

PERSON PROVIDING RESPONSE: Judith L. Dillon

d. Please See RP-1 included as an exhibit with Mr. Popp's testimony

e. Comments on R,T,E Plant and Exemplary Natural Community Assessment: Wilder, Bellows Falls, and Vernon Hydroelectric Projects.

Comments on Mt. Mansfield Colocation Project addresses requests for R,T,E plant inventories, revegetation, and invasive plant surveys.

National Grid G 33 ROW Upgrade addresses proposed conditions to be incorporated into the CPG for the project

Sheldon Solar Invasive Species Management Plan- Provided comments on the proposed decommissioning and invasive species monitoring plan.

Vermont Gas Franklin County Expansion- Provided comment and input on the use of matting and impacts to rare plant species.

f. Vermont Certified Pesticide Applicator

g. PDFs of RTE Data Forms and associated shapefiles

Natural Resources Report Appendix 1 Site Mapping (2/28/13)

Rare Species and Natural Community Report (12/12 and 2/13)

VGS and ANR MOU (3/13)

h. OBJECTION: B Subject to and without waiving this objection.

RESPONSE:

I have discussed the project elements and the potential project impacts with Eric Sorenson

Bill Coster

Alan Quackenbush

Kevin Burke

Jenna Calvi

I have also communicated with ANR counsel Judith L. Dillon

Subject to OBJECTION B, Please see documents produced at VGS:ANR1-15h

Jenna Calvi

a N/A

b N/A

c OBJECTION B. ANR is uncertain what exhibits it may offer at trial.

d N/A

e N/A

f I do not hold any professional licenses.

g During my review of this project, I have relied upon the Vermont Standards and Specifications for Erosion Prevention and Sediment Control, the Stormwater permit application materials, and all other supporting materials provided by the Applicant.

h Since the VGS project has come to the attention of the Vermont Stormwater Program, I have interacted with Kevin Burke of the Vermont Stormwater Management Program regarding the review of the EPSC Plan and developing comments.

I have conferred with Bob Popp and Eric Sorenson of the Vermont Department of Fish & Wildlife, as well as Alan Quackenbush of the Vermont Wetlands Program to discuss potential impacts on natural areas and wetlands.

I have also conferred with Ernie Kelley, of the Vermont Wastewater Section, to determine whether his program would require any additional regulatory oversight to the dewatering operation associated with the Horizontal Directional Drilling.

I have not had any communication with landowners, municipal, or public representatives in relation to this project. The only other individuals I have communicated with pertaining to this project are the Applicant's consultants, Vanasse Hangen Brustlin, Inc.

Jeff Merrell

RESPONSE:

a. I have not been a witness or a party in any prior court or administrative proceedings during the past 5 years.
b. I have not given testimony or otherwise been involved in any prior court or administrative proceedings during the past 5 years.
c. OBJECTION B. ANR is uncertain what exhibits it may offer at trial.
d. Please see ANR-JM-1 included as an exhibit with Mr. Merrell's testimony.
e. I have not offered expert opinion in any prior court proceedings or depositions.
f. I do not hold any professional licenses.
g. I have relied on the information provided by Petitioner and cited by the Petitioner and other witnesses as well as . . .
h. OBJECTION B. Subject to and without waiving this objection.
RESPONSE:
I have discussed the project elements and the potential project impacts with the following state officials:
Brian Woods
Billy Coster
Walter (TJ) Poor
G.C. Morris
Justin Johnson
Dick Valentinetti
Elaine O'Grady
Judith L. Dillon

Alan Quackenbush

A: In the past five years, I have only been a witness in the Georgia Mountain Community Wind project.

b. OBJECTION: The testimony of Mr. Quackenbush is publicly available generally and upon information and belief is available to VG counsel.

d. None.

e. See answer to a above.

f. None

g. Mr. Quackenbush has relied primarily on the information provided by the Petitioner, his education, and experience serving and managing the wetlands program.

h. OBJECTION: To the extent the question seeks confidential communications with counsel or attorney work product; they are privileged and will not be produced. Subject to and without waiving this objection,

I have had verbal communication with Bob Popp, Eric Sorenson, Jenna Calvi, Kevin Burke, Billy Coster, and Judith Dillon of ANR; Mike Adams of the Army Corps of Engineers; and Beth Alafat of EPA regarding overall project impacts.

Eric Sorenson

Act 248: VELCO Southern Loop Transmission Upgrade Project (Docket 7373), Georgia Mountain Community Wind (Docket 7508), and Kingdom Community Wind (Docket 7628)

b a detailed description of any testimony given by the witness in any court or administrative proceeding, and copies of all transcripts, prefiled testimony, exhibits, reports, and other documents relating to such testimony;

A.ANR.1-17.b. OBJECTION The request is overly broad and unduly burdensome and not reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving this objection, ANR provides the following:

RESPONSE: VELCO Southern Loop Transmission Upgrade Project (Docket 7373): I provided testimony on significant natural communities and RINAs along the

proposed route of this transmission line and made recommendations on steps that could be taken to avoid or minimize impacts to these natural features.

Georgia Mountain Community Wind (Docket 7508): I provided testimony on the state-significant natural communities, state-significant site, and RINAs on Georgia Mountain and made recommendations on how impacts to these natural features could be avoided, minimized, or mitigated through revisions of the wind energy project design and land conservation.

Kingdom Community Wind (Docket 7628): I provided testimony on the state-significant natural communities and RINAs on Lowell Mountain and along the utility line corridor and made recommendations on how impacts to these natural features could be avoided, minimized, or mitigated through revisions of the wind energy project design and land conservation.

I have also provided multiple comments for development projects under review through Act 250 and the Vermont Wetland Rules. For Act 250 projects my comments have primarily related to state-significant natural communities as RINAs. For Wetland Rules projects my comments have been primarily related to state-significant natural communities as "exemplary wetland natural communities", one of the ten functions and values protected under the Wetland Rules.

c all exhibits that may be offered in this proceeding through the witness;

OBJECTION: ANR is unaware of what exhibits it may offer through this witness.

d a list of all publications authored in whole or in part by the witness;

A.ANR.1-17.d. Sorenson, E., R. Popp, B. Engstrom, M. Lapin, and D. Farrell. 2010. Softwood Swamps of Vermont: Distribution, Ecology, Classification, and Some Sites of Ecological Significance. Natural Heritage Information Project, Vermont Fish and Wildlife Department, Waterbury, Vermont. 259 pp.

Sorenson, E. and R. Popp, 2006. Limestone Bluff Cedar-Pine Forests of Vermont: A Statewide Inventory. Nongame and Natural Heritage Program, Vermont Fish and Wildlife Department, Waterbury, Vermont. 90 pp.

Thompson, E.H. and E.R. Sorenson. 2000 and 2005. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont.* Published by The Nature Conservancy and Vermont Department of Fish and Wildlife, distributed by University Press of New England. 456 pp.

Sorenson, E., R. Popp, M. Lew-Smith, B. Engstrom, M. Lapin, and M. Ferguson. 2004. Hardwood Swamps of Vermont: Distribution, Ecology, Classification, and Some Sites of Ecological Significance. Nongame and Natural Heritage Program, Vermont Fish and Wildlife Department, Waterbury, Vermont. 332 pp.

Sorenson, E., M. Lapin, B. Engstrom, and R. Popp. 1998. Floodplain Forests of Vermont: Some Sites of Ecological Significance. Nongame and Natural Heritage Program, Vermont Fish and Wildlife Department, Waterbury, Vermont. 175 pp.

Sorenson, E., B. Engstrom, M. Lapin, R. Popp, and Steve Parren. 1998. Northern White Cedar Swamps and Red Maple-Northern White Cedar Swamps of Vermont: Some Sites of Ecological Significance. Nongame and Natural Heritage Program, Vermont Fish and Wildlife Department, Waterbury, Vermont. 261 pp.

Sorenson, E.R. 1994. Vermont Wetlands Conservation Strategy. Vermont Agency of Natural Resources. 121 pp.

Sorenson, E.R. 1992. Vermont Wetland Rules Classification System. In Proceedings of the National Workshop on State Perspectives on Wetland Classification (Categorization) for Regulatory Purposes, Washington, D.C.

Thompson, E., C. Fichtel, and E. Sorenson. 1990. Exceptional Natural Habitats and Rare Plant and Animal Species of Essex County, Vermont. Nongame and Natural Heritage Program, Vermont Fish and Wildlife Department, Waterbury, VT. 186 pp.

Sorenson, E.R. 1986. The Ecology and Distribution of Ribbed Fens in Northern Maine. Maine Executive Planning Office, Critical Areas Program, Augusta, Maine. Planning Report No. 81, 171 pp.

Lowry, D.J., E.R. Sorenson and D.M. Titus. 1986. Wetland Replacement in Massachusetts: Regulatory Approach and Case Studies. In Proceedings of the Fourth Connecticut Institute of Water Resources Wetlands Conference, Storrs,

Connecticut.

Sorenson, E.R. 1986. The Vegetation and Water Chemistry of Two Patterned Fens in Northern Maine. Department of Botany, University of Maine, Orono, Maine. Unpublished Master's Thesis.

e. See OBJECTION and response to b above.

f. None

g. In addition to my education and professional professional background and experience, I have relied on many documents and plans provided by VT Gas, VHB, and Gilman and Briggs for the VT Gas project; Wetland, Woodland, Wildland: A guide to the natural communities of Vermont (Thompson and Sorenson, 2005); ranking specifications for natural communities prepared by VT Fish and Wildlife Department; Natural Resources Conservation Service (USDA) soils maps (available as GIS layers from VCGI); and various aerial photographs available GIS layers from VCGI.

h. OBJECTION: To the extent the question seeks confidential communications with counsel or attorney work product; they are privileged and will not be produced. Subject to and without waiving this objection,

I have discussed the project with:

Art Gilman, Errol Briggs

VHB: Adam Crary, Jeff Nelson, Josh Sky

VT Gas: John Heintz, Jean-Marc Teixeira

ANR: Judith Dillon, Bob Popp, Jenna Calvi, Kevin Burke, Alan Quackenbush, Billy Coster

Interrogatories for Eric Sorenson

Q.PET:ANR.1-18. With respect to your testimony at page 2, lines 11-15 concerning your evaluation of natural communities for Section 248, CUD and Act 250 reviews, identify and describe the instances in which you have concluded that the development reviewed (a) impacted a RINA, (b) fragmented a RINA, (c) unduly adversely impacted a RINA, (d) required relocation or alteration to avoid the RINA, or (e) required mitigation. Produce all such evaluations together with the orders or permits from the permitting agency relating to such natural communities.

RESPONSE: Rare and irreplaceable natural areas are a designation by a District Environmental Commission through Act 250 or the Public Service Board through Act 248. As rare and irreplaceable natural area designation is not an Agency of Natural Resources (ANR) function, there is no ANR centralized location where information is maintained about sites that have been designated as rare and irreplaceable natural areas by these commissions or the PSB. I do not maintain a record myself of all sites for which I have recommended that a state-significant natural community be considered a rare and irreplaceable natural area by a district commission or the PSB. My recommendation that a natural community be considered a rare and

irreplaceable natural area has always been to identify especially important natural communities, and as part of the regulatory review process, to avoid or minimize adverse effects to these natural communities. In Act 250, Pine-Oak-Heath Sandplain Forests and Clayplain Forests have been the community types most commonly addressed as rare and irreplaceable natural areas. The Northshore Wetland in Burlington is an example of a set of different natural community types that was also addressed in Act 250 review as a rare and irreplaceable natural area. In Act 248, I have recommended in testimony that natural communities be considered rare and irreplaceable natural areas for several projects, including VELCO Southern Loop Transmission Upgrade Project (Docket 7373), Georgia Mountain Community Wind (Docket 7508), and Kingdom Community Wind (Docket 7628). In all of these Act 248 projects, modifications were made to the project to avoid or minimize impacts to natural communities. My evaluations of these natural communities as potential rare and irreplaceable natural areas are included in my testimonies and the PSB's rulings on rare and irreplaceable natural areas are included in their decisions, both of which are public records.

Q.PET:ANR.1-19. With respect to your testimony at A5, admit that "state-significant natural communities" and RINAs are not synonymous. If denied, explain why.

RESPONSE: State-significant natural communities and RINAs are not synonymous. In order for me to make a recommendation that a state-significant natural community is a RINA, it must meet all three components of the rare and irreplaceable natural area concept. Specifically, it must be a natural area dominated by natural processes and not human influence, it must be a rare feature in

the Vermont landscape, and it must be a feature that is not reasonably replaced or recreated.

Q.PET:ANR.1-20. With respect to the ANR database of 2,100 significant natural plant communities referenced at page 5 lines 1-6 of your testimony:

a. Describe the database and the information contained in the database;

c. Provide a link to the database;

d. Produce the database;

e. State if the database is accessible to the public on the Agency's website and if not, why not;

f. Produce the shapefiles for all 2,100 communities. Produce all field notes, notes, forms, photographs relating to each such natural plant community in the Project corridor;

RESPONSE:

a. The Natural Heritage Inventory database is maintained by Vermont Fish and Wildlife Department and is an ArcGIS software based system to map the locations and store ecological and biological information about rare plants and animals and state-significant natural communities. Each record for a rare species or state-significant natural community contains detailed information about that species or natural community based on site visits by botanists, zoologists, and/or ecologists. Vermont's Natural Heritage Inventory database is similar to the Natural Heritage databases maintained by all 50 United States, Canadian Provinces, and many

Latin and South American countries and follows a set of consistent methods for collecting and storing data and mapping species and natural communities developed by NatureServe (http://www.natureserve.org/) and the network of state and provincial Natural Heritage Programs.

c.. There is not a direct link available to the Vermont Natural Heritage database. This is in part because the database requires use of ArcGIS software that is costly and not used by most people. It is also because the database contains records of endangered species that the "location confidential" provision of the endangered species law requires the secretary of the Agency of Natural Resources to keep this information confidential to protect the species (Title 10, Chapter 123, §5410). However, all of the location information and identification of whether a record is a plant, animal, or natural community is now available through the ANR's Natural Resources Atlas (http://anrmaps.vermont.gov/websites/anra/).

d. As described above, the database cannot be produced because of the "location confidential" provision of the endangered species law.

e. As described above, the full database is not accessible to the public because it is an ArcGIS software based database that is not used by most people and because of the "location confidential" provision of the endangered species law. However, all of the location information and identification of whether a record is a plant, animal, or natural community is now available through the ANR's Natural Resources Atlas (http://anrmaps.vermont.gov/websites/anra/).

f. OBJECTION: The interrogatory is overly broad and not reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving this objection: ANR offers the following:

RESPONSE: The shapefiles for all of the natural community records in the Natural Heritage database cover all of Vermont and many of the records are on privately owned lands. Vermont Fish and Wildlife Department only provides full access to all details of the natural community or rare plant records for the landowners of the relevant property. Full access to the database records is also provided to foresters or environmental consulting firms along with a data sharing agreement that restricts their further distribution of the data to other parties. Vermont Fish and Wildlife Department has such a data sharing agreement with Vanasse Hangen Brustlin, Inc. (VHB), a consulting firm working with VT Gas on this project, and has provided VHB with all natural community and rare species records for the project area and a wider area of Vermont.

g.

RESPONSE: Summary reports for all of the state-significant natural communities in the VT Gas project corridor that were identified prior to the VT gas project are included as Attachment PET:ANR.1-23c,d, and f. The information in these reports is similar to the data already provided to VHB, except that it lacks the mapping component of ArcGIS shapefiles. Some of the state-significant natural communities along the VT Gas corridor, such as the Red Maple-Green Ash

Swamp at the Monkton and New Haven town line, were identified as a state-significant natural community during the inventory and review process for the VT gas project and are not yet entered into the Vermont Natural Heritage database.

Q.PET:ANR.1-21. Admit that not all 1,200 state significant natural communities have been designated as a RINA.

RESPONSE: Not all 2,100 state-significant natural communities currently documented in the Vermont Natural Heritage database have been designated as RINAs. Only those state-significant natural communities that have been recommended as RINAs by the Fish and Wildlife Department to District Environmental Commissions or the PSB and for which these commissions or the PSB agreed with the Department's recommendation have been designated as RINAs. A very low percentage of the total number of currently known state-significant natural communities have been considered for their potential designation as RINAs.

Q.PET:ANR.1-22. Identify and provide a list of the number of state significant natural communities that have been designated a RINA.

OBJECTION: Cumulative and duplicative of Questions16. As stated in ANR.1-18 above, there is no ANR centralized location where information is maintained about state-significant natural

communities that have been designated as rare and irreplaceable natural areas by the District Environmental Commissions or the PSB. State-significant natural communities have been addressed as RINAs for several projects, including VELCO Southern Loop Transmission Upgrade Project (Docket 7373), Georgia Mountain Community Wind (Docket 7508), and Kingdom Community Wind (Docket 7628).

Q.PET:ANR.1-23. With respect to each of the 6 natural plant communities listed at page 5 lines 15-20:

a. Produce the shapefiles and any maps delineating each community.

b. Produce all field notes, notes, forms, photographs and Vermont site summary forms relating to each such natural plant community.

c. Produce the ANR reports and determinations documenting the basis for why each is a state significant natural community and RINA.

RESPONSE:

Information on state-significant natural communities is generated from several different sources.

The primary source is from natural community inventory projects carried out by Vermont Fish and Wildlife Department staff or contractors working for the Department. Another source is from the work of biologists and ecologists working for conservation organizations or university/colleges who conduct natural community inventories, typically of specific properties, and then provide the information to Vermont Fish and Wildlife Department. For the VT Gas project, examples of this source of data are the

Clayplain Forests for which information was provided by ecologists at the Vermont Land Trust. Another source of information used to identify state-significant natural communities is data generated during the inventory and review of proposed development projects. As an example, during inventory and review of the VT Gas project alignment the Pine-Oak-Heath Sandplain Forest in Colchester and Essex and Red/Silver Maple-Green Ash Swamp in Monkton and New Haven were identified, mapped, and documented based on the combined work by Gilman and Briggs, Vanasse Hangen Brustlin, Inc., and staff of the Vermont Fish and Wildlife Department. Regardless of the source of information about a natural community, the Department applies the same standards to ranking the significance of the community example based on the rarity of the natural community type and the quality of the natural community example, as explained in my testimony (pages 4 and 5).

Given the variation in the sources of information about state-significant natural communities it seems that the most clear presentation is to repeat the list of natural communities from page 5 of my testimony that I recommend be considered RINAs by the PSB and provide background on the sources of information from each and what I am able to provide.

- Pine-Oak-Heath Sandplain Forest in Colchester and Essex. This rare natural community was identified by Gilman and Briggs during their inventory of the VT Gas project corridor. I visited the site on October 25, 2012 with Gilman, Briggs, and Bob Popp and my field notes are included as Attachment PET;ANR1-23a __("Sorenson field notes 10-25-2012.pdf"). I later mapped the extent of the Pine-Oak-Heath Sandplain Forest at the site based on my site visit, soils maps, and

aerial photographs and provided the shapefiles to Gilman and Briggs and VHB (also included as Attachment PET:ANR1-23b "IndianBrookSand").

- Wet Clayplain Forest at the LaPlatte River in Hinesburg. This rare natural community was identified by Gilman and Briggs during their inventory of the VT Gas project corridor. I visited the site on October 25, 2012 with Gilman, Briggs, and Bob Popp and my field notes are included as Attachment PET:ANR1-23a ("Sorenson field notes 10-25-2012.pdf").

- Wet Clayplain Forest at Lewis Creek in Hinesburg. This rare natural community was previously identified and mapped and is included in the Natural Heritage database. The site was visited by Vermont Land Trust staff in cooperation with the landowner in 2009 but has not been visited by VT Fish and Wildlife Department staff. Gilman and Briggs have stated that it is not a clayplain forest, but site access has not been provided by the landowner. A site report from the Natural Heritage database is included as Attachment PET:ANR1-23c "Wet Clayplain Forest - Lewis Creek - VFWD.pdf".

- Wet Clayplain Forest south of Rotax Road in Monkton (if confirmed). This rare natural community was preliminarily identified by Gilman and Briggs during their inventory of the VT Gas project corridor but has not been confirmed due to lack of landowner permission. I have no additional information about the potential Wet Clayplain Forest, except that it is part of a larger and previously documented state-significant Red Maple-Black Ash Seepage Swamp. A site report for this Red Maple-Black Ash Seepage Swamp is included as Attachment PET:ANR1-23d "Red Maple Black Ash Seepage Swamp - Monkton - VFWD.pdf".

- Red/Silver Maple-Green Ash Swamp at the Monkton-New Haven town line. This uncommon natural community was identified by Gilman and Briggs during their inventory of the VT Gas project corridor. I visited the site on May 15, 2013 with Gilman, Bob Popp, and staff from VHB and VT Gas. My field notes are included as Attachment PET:ANR1-23e "Sorenson field notes 5-15-2013.pdf".

- Wet Clayplain Forest at Little Otter Creek in New Haven. This rare natural community was previously identified and mapped and is included in the Natural Heritage database. The site was visited by Vermont Land Trust staff in cooperation with the landowner in 2009. I visited the site on May 15, 2013 with Gilman, Bob Popp, and staff from VHB and VT Gas. My field notes are included as Attachment PET:ANR1-23e "Sorenson field notes 5-15-2013.pdf". A site report for this Wet Clayplain Forest is included as Attachment PET:ANR1-21f "Wet Clayplain Forest - Little Otter Creek - VFWD.pdf".

Q.PET:ANR.1-24. With respect to your testimony at page 6 lines 7-9, identify and produce each such RINA recommendation made to the Public Service Board to date.

OBJECTION: A. The information is publicly available and upon information and belief VG counsel has the testimony of Mr. Sorenson.

I have made recommendations that state-significant natural communities be considered RINAs in my testimony for the following projects before the PSB: VELCO Southern Loop Transmission Upgrade Project (Docket 7373), Georgia Mountain Community Wind (Docket 7508), and Kingdom Community Wind (Docket 7628).

Q.PET:ANR.1-25. With respect to your testimony at A10, produce all of the listed information relied upon to inform your determination as to each of the natural communities addressed in your testimony.

OBJECTION: A. See response to question 17.

Q.PET:ANR.1-26. With respect to your testimony at page 8, line 14:

a. Admit that habitat fragmentation means dividing land with naturally occurring vegetation and ecological processes into smaller and smaller areas as a result of roads, land clearing, development, or other land uses that remove vegetation and create physical barriers between previously connected natural vegetation. If denied, state whether you agree with this definition and if not, why not and provide your definition of habitat fragmentation.

b. Admit that the timber harvesting on state owned land can result in habitat

fragmentation. If you don't know say so?

c. Admit that Project impacts have been minimized by use of HDD. If denied, would ANR support not using HDD?.

a. This is a good general definition of habitat fragmentation.

b. OBJECTION. As written, by use of the article "the" suggests that there is one specific harvesting operation or practice to which the question refers. Unfortunately, additional information on which harvesting has not been included. To the extent a request is required it is denied. Subject to the objection regarding the Request to Admit, ANR offers the following:

RESPONSE: Forest management on state or privately owned land that creates openings in a forest may result in some fragmentation effects, depending on the size of the openings. A very important distinction between any openings created in forests by management activities and those to be created by the VT Gas project are that forest management creates temporary openings and the VT Gas managed corridor would result in permanent openings. Temporary canopy openings are a natural dynamic process in most forested natural communities resulting from disturbance from wind, ice, flooding, and fire. Any fragmenting effects from natural disturbance-created openings or from forest management are temporary and will end when the forest canopy closes through the processes of succession and tree growth. Fragmenting effects from a gas or utility line corridor will not

end as the corridor is permanently maintained as early successional vegetation.

c. DENIED. The project plans and project materials indicate that except for 300 feet of the area under the Monkton swamp, VG will implement permanent management of the vegetation over all other areas where there is a state-significant natural community over an HDD. This vegetation management undermines the mitigating effects of the HDD. The use of HDD will significantly reduce impacts to the natural communities on the surface above the HDD if there is also no permanent management of the vegetation in the natural community and if there is agreement that the pipeline will not be excavated from the surface in the future if there is a pipeline leak or damage.

Q.PET:ANR.1-27. With respect to you testimony at A13:

a. Admit that the approximately 75 acres of the Pine-Oak-Sandplain Forest is fragmented by an existing VELCO transmission line. If denied, explain why denied.

OBJECTION: As phrased the question contains some ambiguity and does not accurately reflect the testimony of Mr. Sorenson. Subject to and without waiving this objection, ANR provides the following:

RESPONSE: As I stated in my testimony, "The only significant fragmentation within this block is from the existing managed right-of-way for the VELCO power line". The Pine-Oak-Heath Sandplain Forest is part of this 900 acre habitat block and

the VELCO right-of-way is also the primary source of fragmentation within this rare natural community. This is still one of the best patches of sandplain forest in Chittenden County, even with the VELCO line present. I do not consider the presence of a fragmenting feature such as the VELCO corridor, which was constructed over 25 years ago when habitat fragmentation was not recognized as such an environmental concern, to be a relevant justification for additional fragmentation of this rare natural community. All remaining examples of Pine-Oak-Heath Sandplain Forest contain some permanent fragmenting featured or are themselves fragments of the past extent of this natural community. The goal is to avoid or minimize future fragmentation of this rare natural community.

b. Describe in detail the referenced disturbance caused by the existing Gauthier operation and the borrow pit, as stated on lines 20-21.

RESPONSE

On property owned by Gauthier at the north end of Gauthier Drive there are numerous metal storage containers in the VELCO right-of-way and to a lesser extent in the adjacent forest edge. There is a network of dirt roads to access the material that is stored here. This activity precludes the establishment of natural vegetation in most area. My estimate, based on my site visit and viewing aerial photographs is that this area of material storage and dirt roads occupies about 2.2 acres. The area is not considered Pine-Oak-Heath Sandplain Forest due to its very disturbed

condition.

On property owned by VTRANS south of the proposed VT Gas alignment from approximately MP 1.66 to MP 1.98 is an area I referred to in my testimony as "the borrow pit for the Circumferential Highway". Although I do not know for certain that this area was used as a borrow pit, it has been excavated in the recent past and all topsoil has been removed. This disturbed area now has sparse herbaceous and shrubby vegetation but no forest cover. My estimate, based on my site visit and viewing aerial photographs is that this former excavated area occupies about 7.6 acres. The area is not considered Pine-Oak-Heath Sandplain Forest due to its very disturbed condition.

c. Identify and describe the limits of, and produce a map showing the 75 acre Pine-Oak-Sandplain Forest referenced at page 10 line 16.

RESPONSE: The boundary of the Pine-Oak-Heath Sandplain Forest is based on my site visit to the property and review of aerial photographs and Natural Resources Conservation Service soils mapping. Pine-Oak-Heath Sandplain Forest occurs primarily on Adams-Windsor soils, which are deep, well-drained sand. I have not walked all of the boundaries of the 75 acres of Pine-Oak-Heath Sandplain Forest that I mapped, but I expect that the actual extent of the rare natural community is larger than I mapped, not smaller. A map is provided as Attachment PET:ANR1-23b " "Map of Sandplain Forest & Habitat Block - VFWD.pdf" that shows the

location of the 75 acre Pine-Oak-Heath Sandplain Forest as green polygons (the area in acres is included for each of the three polygons).

d. Identify and describe the limits of, and produce a map showing 900 acre forest and wetland block referenced at page 11 line 9.

RESPONSE:

The approximately 900 acre habitat block was identified as part of Vermont Fish and Wildlife Department's statewide habitat block project. The boundaries of the 906.8 habitat block are defined by the presence of roads, houses, buildings, and other development. A map is provided as AttachmentVGS.ANR1-25d "Map of Sandplain Forest & Habitat Block - VFWD.pdf" that shows the location of the 900 acre habitat block as a blue, transparent polygon. Roads and buildings are shown on the map as well.

e. Describe the natural community type and rank of the 900 acre large block of forest and wetland referenced.

RESPONSE

I have not evaluated natural communities on the 900 acre habitat block other than the subject Pine-Oak-Heath Sandplain Forest being reviewed for the VT Gas project.

f. Admit that you could calculate the permanent and temporary impacts to the sandplain forest using the EPSC plans provided by VGS. If denied, explain why

denied and how you determined amount of impact. Produce all documents relating to same.

OBJECTION: The interrogatory is vague and confusing and does not ask a question of fact or is otherwise an appropriate question for a request to Admit. Subject to and without waiving this objection, ANR offers the following:

RESPONSE: I have access to digital and paper copies of the EPSC plans provided by VT Gas. From these I can roughly estimate the area of permanent and temporary impacts to Pine-Oak-Heath Sandplain Forest using a scale. As VT Gas has not provided ANR with GIS shapefiles of the proposed project temporary and permanent impacts, I cannot accurately calculate the areas of these proposed impacts. I expect that this would be a simple exercise for VT Gas or VHB to produce. VHB has provided ANR with proposed areas of impact (not separated into permanent and temporary impacts) for the Red Maple-Green Ash Swamp and two of the Wet Clayplain Forests in an April 12, 2013 meeting.

Q.PET:ANR.1-28. With respect to you testimony at page 12, lines 17-22:

a. What have you assumed for the depth of the HDD and what is the basis for this assumed depth?

OBJECTION: The use of the term assumed is vague and confusing. Subject to and without waiving this objection, ANR provides the following response:

RESPONSE: It is not clear to me where, or if, in the numerous VT Gas submittals there is information on the depth of each proposed HDD. The proposed HDD under the Pine-Oak-Heath Sandplain Forest and Indian Brook must be below the level of Indian Brook (slightly below 200 feet elevation based on the USGS topographic maps). The Pine-Oak-Heath Sandplain Forest to the west is at approximately elevation 280 feet. Therefore, the eastern portion of the HDD under the Pine-Oak-Heath Sandplain Forest must be at least 80 feet deep based on the USGS maps– much deeper than red oak (the locally dominant tree) root systems. Using the most recent EPSC Plans (6/28/2013), it appears that Indian Brook is at approximately 210 feet elevation and the majority of the sandplain forest is above 280 feet elevation – the 70 feet is much deeper than oak or other tree roots. The western end of the HDD ends and trenching begins within the western portion of the Pine-Oak-Heath Sandplain Forest.

It would be helpful if Petitioner could point out the relative depths of the HDD along the project corridor.

b. Admit that regardless of pipeline depth, that the absence of a cleared corridor over the pipe would preclude aerial safety surveys.

OBJECTION: The question assumes certain facts and information that has not been provided and contains certain undefined terms that are subject to different interpretations and is therefore vague and confusing. Moreover, the question contains a number of uncertainties that precludes a response. To the extent one is

required it is DENIED. Subject to and without waiving this Objection, ANR adds the following:

I am not aware of any detailed information provided by VT Gas on how aerial surveys would be conducted.

c. Admit that the HDD in this area mitigates impacts to the Pine-Oak-Sandplain Forest.

Under the current plans to use vegetation management on the surface above the HDD, DENIED.

If there is also no permanent management of the vegetation in the sandplain forest and if there is agreement that the pipeline will not be excavated from the surface in the future if there is a pipeline leak or damage, the use of HDD will significantly reduce impacts to the POHSF on the surface above the HDD

Q.PET:ANR.1-29. With respect to your testimony at page 13, lines 4-9 explain how the Project construction will result in permanent soil alteration, and identify, describe and produce all documents supporting this statement.

RESPONSE: Soils in the Pine-Oak-Heath Sandplain Forest have developed over the past 11,000 years since the retreat of the glaciers and the exposure of the sandy deltas formed in the Champlain Sea. The Adams-Windsor soils where Pine-Oak-Heath Sandplain Forests occur have well-defined soil horizons, consisting of surface organics, a shallow horizon of organic and mineral soil mixing (A), and the deep B and C sandy horizons. Trenching, installing a metal

pipeline, and backfilling will inevitably change the soil profile and other soil characteristics, such as drainage. Even with very careful construction techniques to stockpile topsoil, the result of construction will be a modified soil profile containing a metal pipe. In addition, where there is permanent clearing or maintenance of vegetation over the pipeline, organic material that naturally accumulates in forested communities will no longer develop. I consider these impacts to clearly be permanent alterations to the Pine-Oak-Heath Sandplain Forest soils.

Q.PET:ANR.1-30. With respect to your testimony at page 13, lines 20-22, admit that VGS provided a detailed evaluation of the realignment of this section of the pipeline onto the VELCO corridor in the December 20, 2012, and that the conclusion of that evaluation would be that there would be greater impacts to natural resources from this alternative alignment. Also admit that you have not provided the applicant with any review comments on that evaluation.

OBJECTION: The question is vague and confusing and a response cannot be provided. If one is required, it is denied.

I am not sure what this question refers to. ANR met with VT Gas and VHB staff on December 5, 2012 and we discussed potential alignments and alternatives in the vicinity of the Pine-Oak-Heath Sandplain Forest, but I do not recall any "detailed evaluation" provided by VT Gas at this meeting or later in writing. Jeff Nelson of VHB provided the "Riparian Zone Vegetation Management" (dated 12/6/12 by T.J. Boyle) in a follow-up email to our meeting on December 13, 2013. This is the drawing that shows the "feathered" approach to post-construction

vegetation management that still results in a 50 foot wide managed corridor.

Q.PET:ANR.1-31. With respect to the steps outlined in your testimony in the bullets appearing at pages 14-15:

a. Admit that the reroute suggested in the first bullet would cause the Project alignment to shift to residential neighborhoods.

Admitted in part and Denied in part. The reroute I suggested would place the VT Gas alignment in existing roadsides through already developed residential and industrial areas and would avoid impacts to the rare Pine-Oak-Heath Sandplain Forest.

b. Identify the statute, rule or guideline that applies a "least damaging environmental alternative" standard, as referenced at page 14 lines 7-9, to review of Section 248 impacts to natural plant communities or RINA.

OBJECTION: The question calls for a legal conclusion and is not the appropriate subject for a request to Admit. To the extent a response is required, it is DENIED.

c. Did you intentionally omit "practicable" from this standard? If so, why?

OBJECTION: The question is vague and confusing. The testimony provides the opinion of Mr. Sorenson.

d. Admit that for purposes of Section 404 review under the Clean Water Act, the

Army Corps of Engineers ("ACOE") and the Environmental Protection Agency ("EPA") apply the "least damaging environmentally practicable alternative, or "LEDPA." If denied, explain why denied.

OBJECTION: The question is not reasonably calculated to lead to the discovery of admissible evidence. The question calls for a legal conclusion and is not the appropriate subject for a request to Admit. To the extent a response is required, it is DENIED.

d. Admit that for Section 404 LEDPA review, "practicable" means "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." If denied, explain why.

OBJECTION: The question calls for a legal conclusion and is not the appropriate subject for a request to Admit. To the extent a response is required, it is DENIED.

e. Identify the number of residences and other buildings that would be in close proximity to the proposed transmission line using the Mill Pond, Severance, Kellogg and Susie Wilson Road alternative that you suggest.

OBJECTION: The question is vague and confusing and contains a number of undefined terms.

g. Explain how the Project will unduly degrade the natural community and produce all documents supporting this determination.

RESPONSE: The Pine-Oak-Heath Sandplain Forest is a rare natural community type for which very few examples remain in Vermont. Vermont continues to lose portions

of the remaining Pine-Oak-Heath Sandplain Forest, typically as a result of small developments on the edges of remaining sandplain forests that are not regulated through Act 250. Without further mitigation, the VT Gas project would result in fragmentation and permanent alteration of this 75 acre Pine-Oak-Heath Sandplain Forest example, with the impact areas not occurring on the margins of the natural community, but instead extending nearly through its center. Fragmentation of the natural community, permanent alteration of vegetation, and potential for additional future impacts associated with excavation to repair the pipeline all contribute to an undue adverse effect on the natural community (recommended as a RINA) and the natural environment.

h. Explain how the Project would jeopardize the ability of the natural community to continue and produce all documents supporting this determination.

RESPONSE: If the project is constructed as proposed, I expect that the remaining areas of Pine-Oak-Heath Sandplain Forest outside of the VT Gas and VELCO corridors will continue as this natural community type, but the natural community example will be decreased in significance and ecological integrity due to the additional fragmentation, permanent alteration of vegetation, and the increased likelihood for introduction of invasive species associated with these disturbances. Pine-Oak-Heath Sandplain Forest is a rare natural community type mostly because it has been so fragmented and reduced in extent by development.

The VT Gas project as proposed would result in a significant alteration of this remaining example of Pine-Oak-Heath Sandplain Forest and is not part of a sustainable path to conserve the last of this rare natural community type.

i. Has ANR communicated to the Town of Williston and landowners ANR's intention to recommend that the pipeline be rerouted and, if so, describe the reaction and produce all written communications relating to same.

RESPONSE: My recommendation is included in my testimony. ANR's primary role is to address environmental impacts associated with the project and suggest alternatives. If there are safety issues associated with locating the pipeline near residences I expect that VT Gas can clearly identify those issues. I am not aware of the safety issues, but if it is safety issues that preclude locating the pipeline along roadsides and near residences, then I question why these same safety issues make it acceptable to locate the pipeline through so many important wetlands, natural communities, rare plant populations, and under so many migrating river channels.

Q.PET:ANR.1-32. With respect to your testimony at A14 & A15:

a. Produce all documents relating to and supporting the VFWD determination that the wet clayplain forests constitute a RINA.

RESPONSE: I provided documents regarding these two natural communities in response to Q.PET:ANR.1-23. As I stated in my testimony, Wet Clayplain Forest is a rare

natural community type in Vermont, primarily because most of the wet and moist clay soils of the Champlain Valley have been cleared for agricultural use in the past. I have visited the Wet Clayplain Forest on the north side of the LaPlatte River, but I have not visited the Wet Clayplain Forest on the south side of Lewis Creek because the landowners have not given their permission to VT Gas. The information I have reviewed for the Wet Clayplain Forest south of Lewis Creek is based on a record in the Natural Heritage database. At both sites, species composition and hydrology appear to be consistent with examples of this natural community type supported by natural processes, not human disturbance. Wet Clayplain Forests have developed on the wettest clay soils that were deposited in the Champlain Sea about 12,000 to 13,500 years ago. The natural community has developed as species migrated individually into the region after the retreat of the glaciers. Soil organic matter, soil horizons, soil drainage characteristics and the specific composition of species making up each Wet Clayplain Forest have developed over thousands of years and are determined by site-specific characteristics. Wet Clayplain Forests and other rare natural communities cannot be replaced once they are destroyed. Although we can plant tree species characteristic of the natural community in the appropriate wet clay soils, the result is not an ecologically intact and functioning Wet Clayplain Forest.

b. Explain how the Project will unduly degrade the natural community.

OBJECTION: The question does not accurately reflect the testimony of Mr. Sorenson.

RESPONSE. For the Wet Clayplain Forest at Lewis Creek I recommended that Construction Type 2D be used instead of 2A to reduce the width of clayplain forest clearing and both Mr. Nelson and Mr. Heintz have stated in their rebuttal testimony that change will be made. For the Wet Clayplain Forest south of Lewis Creek HDD is proposed, however surface vegetation management has not been addressed for this community and a site visit opportunity has not been provided.

c. Explain how the Project would jeopardize the ability of the natural community to continue and produce all documents supporting this determination.

OBJECTION: The question does not accurately reflect the testimony of Mr. Sorenson.

RESPONSE: Based upon the available information, if the mitigation measures I recommended are implemented, I expect that these Wet Clayplain Forests will persist.

d. Please explain how this community type within or nearby to the project site should be considered irreplaceable in the landscape.

RESPONSE: Wet Clayplain Forest is a rare natural community type that occurs on hydric clay soils exposed about 11,000 years ago after the retreat of the glaciers and receding of the Champlain Sea. The species composition and soils of Wet Clayplain Forest have developed over many thousands of years. Although there

are on-going efforts to restore Wet Clayplain Forests in the Champlain Valley on abandoned wet agricultural land, these efforts to date have resulted in vegetated and sparsely forested communities on clay soils, but nothing that meets the standards of a state-significant Wetland Clayplain Forest. I have not yet seen evidence that humans can replace Wet Clayplain Forests. See also my response to part a. above.

Q.PET:ANR.1-33. With respect to your testimony at A15, page 17 lines 11-13:

a. Explain how the Project will unduly degrade the natural community and produce all documents supporting this determination.

RESPONSE: It is difficult to evaluate impacts to this Wet Clayplain Forest as an opportunity for a site visit has not been provided due to lack of landowner permission. However, after additional review of the sparse information we have about this Wet Clayplain Forest, I do not believe that there will be an undue adverse effect on the natural community if surface vegetation management is conducted as specified for Significant Natural Communities Vegetation Management (VMT Type B) in the Vegetation Management Plan provided with Mr. Nelson's rebuttal testimony (Exhibit Petitioner Reb. JAN-1).

b. Explain how the clearing would jeopardize the ability of the natural community to continue and produce all documents supporting this determination.

RESPONSE: See response to PET:ANR.1-31a.

c. Explain how the clearing would result in an undue adverse impact to the natural community and produce all documents supporting same.

RESPONSE: See response to PET:ANR.1-31a.

Q.PET:ANR.1-34. With respect to your testimony at A16:

a. Produce all documents relating to and supporting the VFWD determination that this swamp constitutes a RINA.

OBJECTION: The question does not accurately reflect or represent the testimony of Mr. Sorenson.

RESPONSE: I have not recommended that the Red Maple-Black Ash Seepage Swamp be considered a RINA. See A7 of my testimony.

b. Admit that an S4 natural community type is not rare.

OBJECTION: The question does not accurately reflect or represent the testimony of Mr. Sorenson.

RESPONSE: See response to PET:ANR.1-34a above.

c. Admit that the number of high quality S4 natural plant communities is low.

OBJECTION: The question does not accurately reflect or represent the testimony of Mr. Sorenson.

RESPONSE: See response to PET:ANR.1-34a above.

d. Admit that this S4 natural community is not an exceptional and if denied explain why this is an exceptional example of this S4 common plant community and the specific attributes that make it exceptional and produce all documents supporting same.

OBJECTION: The question does not accurately reflect or represent the testimony of Mr. Sorenson.

RESPONSE: See response to PET:ANR.1-34a above.

e. Explain how the Project will unduly degrade the natural community and produce all documents supporting this determination.

OBJECTION: The question does not accurately reflect or represent the testimony of Mr. Sorenson.

RESPONSE: See response to PET:ANR.1-34a above.

f. Explain how the Project would jeopardize the ability of the natural community to continue and produce all documents supporting this determination.

OBJECTION: The question does not accurately reflect or represent the testimony of Mr. Sorenson.

RESPONSE: See response to PET:ANR.1-34a above.

g. Explain how the Project would result in an undue adverse impact to this natural community and produce all documents supporting same.

OBJECTION: The question does not accurately reflect or represent the testimony of Mr. Sorenson.

RESPONSE: See response to PET:ANR.1-34a above.

h. Admit that the natural community is not shown to be present in the pipeline at MP 24.7 and if denied, identify where it is shown on the Petitioner maps and produce all other documents that demonstrate that it is within the Project pipeline corridor.

RESPONSE: The Red Maple-Black Ash Seepage Swamp is not within the VT Gas pipeline corridor but it is located just west of the corridor in the vicinity of MP 24.7 to MP 24.8. My comments in A16 of my testimony are about the potential Wet Clayplain Forest located within the VT Gas pipeline corridor and east of the Red Maple-Black Ash Seepage Swamp. A site visit to this potential Wet Clayplain Forest has not been possible due to lack on landowner permission.

Q.PET:ANR.1-35. With respect to A17 of your testimony:

a. Explain how the Project will unduly degrade the natural community and produce all documents supporting this determination.

RESPONSE: The Mt. Florona Swamp (Monkton Swamp) is a very significant wetland

complex. VT Gas project impacts to this wetland complex are best addressed as impacts to the natural environment, not impacts to specific natural communities. In my testimony, I have not suggested undue adverse impacts will occur to any specific natural communities, but instead to the natural environment in general, here represented by a large and significant wetland complex. The Mt. Florona Swamp is approximately 270 acres and is composed of many wetland natural community types, including cattail marsh, shallow emergent marsh, northern white cedar swamp, and several variations of hardwood swamp. This wetland complex of many natural communities functions as a whole ecological system and potential impacts should be considered for their potential effects to the entire complex.

There still remains considerable uncertainty for me about what the impacts to this wetland complex will be. For example, there is approximately 3.7 acres of alternate temporary work space shown on the EPSC Plan (see EPSC-056 6/28/2013) and this marked area clearly includes areas designated as forest. However, in his rebuttal testimony Mr. Heintz states "The currently planned workspace referenced is located within the VELCO corridor, which is currently cleared and maintained." Another example is that VT Gas and VHB have told ANR that there would be no vegetation management over the HDD that runs through the Mt. Florona Swamp, but it appears that no vegetation management is only proposed for an approximately 300 foot unspecified section of the swamp

crossing and the remaining approximately 1,500 feet of the wetland HDD crossing would have surface vegetation management. In his rebuttal testimony, Mr. Tiexeira clarified that if the HDD pipeline under Mt. Florona Swamp were to become inoperable, it would be abandoned in place. This is helpful, but not very specific for such significant potential pipeline abandonment – would the entire 1,800 feet of pipeline be abandoned? Until I have clear information about these issues, it is difficult to fully evaluate potential undue adverse effects on the natural environment from the proposed Mt. Florona swamp crossing.

b. Explain how the Project would jeopardize the ability of the natural community to continue and produce all documents supporting this determination.

RESPONSE: See my response to PET:ANR.1-35a

b. Explain how the Project would result in an undue adverse impact to this natural community and produce all documents supporting same.

RESPONSE: See my response to PET:ANR.1-35a

c. If the HDD places the pipe below the peat layer, how would this impact your assessment of the location of the pipeline in this area?

RESPONSE: In his rebuttal testimony, Mr. Heintz states that the HDD pipeline will be "25 feet below the peat layer". If this means 25 feet below the documented

lowest depth of the peat (therefore in the underlying mineral substrate), this eliminates any concerns I have regarding the potential impact of the HDD pipeline on the hydrology of Mt. Florona Swamp. If this means 25 feet below the surface layer of the peat (the wetland surface) it does not address my concerns regarding wetland hydrology impacts. In either case, there are still proposed impacts to the wetland complex over the HDD section for surface vegetation management.

d. If the pipe is abandoned in place if it fails, would that address your concern regarding repairs impacting the swamp and natural community?

RESPONSE: Yes, that addresses concerns regarding potential impacts to the wetland complex from pipeline repairs, as long as it is clarified that the entire length of the HDD pipeline under the wetland complex would be abandoned in the event of a pipeline failure. I am unfamiliar with any other issues or laws regarding abandoning a pipeline in place.

e. Admit that the recommended reroute you describe at page 19 would place the pipeline on the original road alignment as filed in the VGS December, 2012 248 filing in this docket.

RESPONSE: Yes. The recommended reroute would be back to the available alignment proposed with the December 2012 Petition for the project, that I originally

reviewed on my October 25, 2012 site visit, and for which I did not identify any significant natural community or RINA concerns in this vicinity.

f. Has ANR communicated to the Town of Monkton or its residents its intention to recommend that the pipeline be rerouted back to the road and, if so, describe the reaction and produce all written communications relating to same.

RESPONSE: The Town is a party and has received a copy of ANR's testimony. ANR's primary role is to address environmental impacts associated with the project and suggest alternatives. There are many fewer environmental impacts associated with locating the pipeline along Monkton Road.

Q.PET:ANR.1-36. With respect to A18 of your testimony:

a. Produce all documents relating to and supporting the VFWD determination that this natural community is a RINA.

RESPONSE: The Red/Silver Maple-Green Ash Swamp was identified by Gilman and Briggs during their inventory of the VT Gas project corridor. I visited the site on May 15, 2013 with Gilman, Bob Popp, and staff from VHB and VT Gas. My field notes are included as Attachment PET:ANR.1-21f "Sorenson field notes 5-15-2013.pdf". I have no other documents regarding this natural community other than those provided by Gilman and Briggs for VT Gas.

b. Admit that this is not a rare natural community.

Q.PET:ANR.1-37. Red/Silver Maple-Green Ash Swamp is an uncommon natural community type known to occur only in the Champlain Valley of Vermont. The primary physical environmental feature that results in the development of this wetland natural community is its unusual flooding regime – a long duration flooding that may extend into June on typical years with occasional flooding at other times of the year. Silver maple and green ash are both especially tolerant of flooding and are most commonly associated with floodplain forests along rivers and large lakes. We currently know of 28 examples of Red/Silver Maple-Green Ash Swamp in Vermont (Vermont Fish and Wildlife Department Natural Heritage database), including the subject swamp on the Monkton-New Haven town line. Of these 28 swamps, 20 are directly associated with flooding of Lake Champlain or Otter Creek. Only nine of the swamps occur in a much more unusual setting – relatively shallow basins in relatively flat landscapes where the topography and surface runoff conditions result in a flooding regime in the basins that is very similar to that found adjacent to Lake Champlain and Otter Creek. Being one of only nine examples of this basin type of Red/Silver Maple-Green Ash Swamp, I consider the swamp on the Monkton-New Haven town line to be a rare natural area.

c. Admit that the natural community is not an exceptional occurrence. If denied, produce all documentation associated with this determination including a list of all other similar community types considered.

RESPONSE: DENIED. As explained in A.ANR.1-36.b., the Red/Silver Maple-Green Ash Swamp on the Monkton-New Haven Town line is an unusual basin-type

example of this uncommon natural community type. Using Vermont Fish and Wildlife Department ranking standards it is ranked as a B quality occurrence of this natural community type, based on its good condition, large size, and poor landscape context. For comparison, the following table lists all the known Red/Silver Maple-Green Ash Swamps in Vermont from the Natural Heritage database, not including the swamp on the Monkton-New Haven town line that has not yet been entered. The quality rank (EO_Rank) is also provided for each "element occurrence". The eight basin type examples of this natural community type are listed in bold and italics (not including the swamp on the Monkton-New Haven town line).

Red/Silver Maple-Green Ash Swamp Name	EO_RANK
CORNWALL SWAMP, WHITING SWAMP	A
FARMINGDALE SWAMP	B
GRAND TRUNK SWAMP	B
GRANDMA LAMPMAN	B
GREEN POINT SWAMP	C
HALF MOON COVE, DERWAY ISLAND	AB
HINESBURG GREEN ASH SWAMP	C
HOLIDAY POINT SWAMP	A
LAMOILLE RIVER DELTA	A
LEICESTER JUNCTION SWAMP	AB
MALLETTS CREEK MARSH	B
MAQUAM BAY	A
MARSH HILL SWAMP	B
MISSISQUOI DELTA NORTHEAST, MISSISQUOI DELTA	A
MUD CREEK MARSH	B
NIQUETTE STATE PARK-CROCKETT SWAMP	B
NORTH HERO STATE PARK	B
PEARL SWAMP	B
ROSETTI NATURE PRESERVE WETLAND, ROSSETTI BEACH	
SALISBURY SWAMP	A
SHOREHAM SWAMP	B
SPLIT SWAMP	C
STATION ROAD SWAMP	C
SUNSET LAKE FARM	B
SUNSET VIEW SWAMP	B
WEST SHORE ROAD SWAMP	C
WETLAND WEST OF HYDE POINT	B

d. Explain how the Project will result in hydrologic alterations to and unduly degrade the natural community and produce all documents supporting this determination.

RESPONSE: In my testimony I did not suggest that the project as proposed would result in hydrologic alterations of the Red/Silver Maple-Green Ash Swamp. As proposed, the primary impacts to the swamp would be from alteration of the soil profile associated with trenching and installing the pipe, clearing of approximately 0.6 acres of the swamp (2,500 feet long by 10 feet wide), and the likelihood of additional invasive species introduction associated with construction in wetland soils.

f. Explain how the Project would jeopardize the ability of the natural community to continue and produce all documents supporting this determination.

RESPONSE: I expect that the Red/Silver Maple-Green Ash Swamp will persist if the pipeline is constructed as proposed, but the condition of the swamp will be degraded.

g. Explain how the Project would result in an undue adverse impact to this natural community and produce all documents supporting same.

RESPONSE: As described in A.ANR.1-35.d., the primary impacts to the swamp would be from alteration of the soil profile associated with trenching and installing the pipe, clearing of approximately 0.6 acres of the swamp, and the likelihood of additional invasive species introduction associated with construction in wetland soils.

h. Admit that the Project has undergone multiple design revisions in this area to minimize impacts to the natural community and the supporting wetland, as well as developing a project specific vegetation management protocol to further minimize impacts.

RESPONSE: DENIED. The original project proposal available and filed with the Board in December 2012 avoided the natural community and supporting wetland. The subsequent alignment and design shift impacted this natural community and supporting wetland. In addition, the vegetation management plan is designed to facilitate maintenance during operation of the project. This state-significant Red/Silver Maple-Green Ash Swamp is not addressed at all in the Vegetation Management Plan submitted by Mr. Nelson with his rebuttal testimony (Exhibit Petitioner Rebuttal JAN-1 (6/28/13).

Q.PET:ANR.1-38. With respect to A18 of your testimony:

a. Produce all documents relating to and supporting the VFWD determination that this natural community is a RINA.

RESPONSE: I am assuming that this question is meant to pertain to A19 of my testimony, not A18. My answer that follows pertains to A19 of my testimony. I provided documents regarding these two natural communities in response to Q.PET:ANR.1-21. As I stated in my testimony, Wet Clayplain Forest is a rare natural community type in Vermont, primarily because most of the wet and moist

clay soils of the Champlain Valley have been cleared for agricultural use in the past. This rare natural community was previously identified and mapped and is included in the Natural Heritage database. The site was visited by Vermont Land Trust staff in cooperation with the landowner in 2009. I visited the site on May 15, 2013 with Art Gilman, Bob Popp, and staff from VHB and VT Gas. The species composition, soils, and hydrology of this Wet Clayplain Forest indicate that this natural community is supported by natural processes, not human disturbance; therefore it is a natural area. I am not aware of any evidence that humans can replace or recreate Wet Clayplain Forests and the complex ecological interactions of this or other intact natural communities once they have been significantly altered or lost.

b. Admit that the White Cedar Swamp is an S3 community ranking and is not a rare natural community.

RESPONSE: The Northern White Cedar Swamp is an uncommon natural community type. The small example of Northern White Cedar Swamp at approximately MP 32.25 can be viewed as an inclusion within the larger and surrounding Wet Clayplain Forest. The Northern White Cedar Swamp by itself is not recommended for consideration as a RINA, but the entire wetland comprised primarily of rare Wet Clayplain Forest is.

c. Admit that the White Cedar Swamp natural community is not an exceptional occurrence.

RESPONSE: This is a small, but intact example of this uncommon natural community type. By itself, Vermont Fish and Wildlife Department does not consider this a state-significant example of Northern White Cedar Swamp.

d. Admit that VGS has already minimized impacts by co-locating within 10 feet of the edge of the VELCO corridor.

RESPONSE: DENIED. VT Gas had originally (December 21, 2012) proposed location of the pipeline outside the swamp along North Street and this would completely avoid impacts to the Wet Clayplain Forest and Northern White Cedar Swamp. The current proposal is an increase not a decrease in impacts.

Admitted that the current proposed Construction Types 2D and W are proposed for pipeline installation through the Wet Clayplain Forest and Northern White Cedar Swamp. Of specific concern, however, are the deep peat accumulations of unknown depth in the Northern White Cedar Swamp and how construction will be accomplished through this deep peat without resulting in an undue adverse effect on the natural environment. VT Gas and VHB have still not provided documentation of the peat depth (I know from my site visit that it is greater than four feet) or how construction would be accomplished through this deep peat without altering the adjacent organic soil (slumping of the soil) and wetland

hydrology.

e. Explain how the Project will unduly degrade the natural communities and produce all documents supporting this determination.

RESPONSE: The project as proposed will result in clearing of forest within the Wet Clayplain Forest (the area of impact is unclear as the Wet Clayplain Forest is not shown on the 6/28/2013 EPSC Plan sheet 067), likely introduction of additional invasive species into the rare natural community, and alteration of the natural soil profile. In addition, there will be significant but still unknown impacts to the organic soils and hydrology of the Northern White Cedar Swamp.

f. Explain how the Project would jeopardize the ability of the natural communities to continue and produce all documents supporting this determination.

RESPONSE: Given the unknown peat depth and unknown effects on soils and wetland hydrology associated with open trench construction through deep peat, the future of the Northern White Cedar Swamp is uncertain.

g. Explain how the Project would result in an undue adverse impact to the natural communities and produce all documents supporting same.

RESPONSE: The project as proposed will result in clearing of forest within the Wet Clayplain Forest (the area of impact is unclear as the Wet Clayplain Forest is not

shown on the 6/28/2013 EPSC Plan sheet 067), likely introduction of additional invasive species into the rare natural community, and alteration of the natural soil profile. In addition, there will be significant but still unknown impacts to the organic soils and hydrology of the Northern White Cedar Swamp.

h. Has ANR communicated to the Town of New Haven and landowners along the alternative North Street route described at page 23 of your testimony, ANR's intention to recommend that the pipeline be rerouted to the road and, if so, describe the reaction and produce all written communications relating to same.

RESPONSE: The Town is a party and has received a copy of ANR's testimony. ANR's primary role is to address environmental impacts associated with the project and suggest alternatives. There are many fewer environmental impacts associated with locating the pipeline along North Street.

Q.PET:ANR.1-39. Regarding A20 of your prefiled testimony:

a. Identify and produce the regulation, guideline or case precedent that supports replantings of vegetation as a condition to restore natural communities following installation of utility lines.

OBJECTION calls for a legal conclusion. The question is not reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving this

objection, ANR submits the following:

RESPONSE: The recommendation in my testimony was that plantings of native species are appropriate for all areas where vegetation is removed for construction but will be allowed to return to forest or natural vegetation after construction is completed. Establishment of native species in areas that are to be regularly mowed is also of ecological value in that this will reduce the likelihood for establishment of non-native invasive species. In any situation, the selection of plants to be established along the corridor should be based on the conditions by which they will be managed during the maintenance phase of the project. Plantings would especially useful in areas where there is soil disturbance that removes vegetation.

b. Admit that the ecological value of plantings would be limited in areas that will be routinely mowed.

RESPONSE: DENIED. See previous response.

c. Has ANR considered the cost to Vermont ratepayers associated with a re-plantings plan as you have suggested?

RESPONSE: I have not evaluated the cost of plantings, but given that state-significant natural communities occupy a small percentage of the total VT Gas project corridor and that plantings would only be appropriate in certain settings, I do not expect the cost to be prohibitive.

Interrogatories for Bob Popp

Q.PET:ANR.1-40. With respect to your testimony at page 3, lines 15-16, please specifically identify each location, with reference to the Petitioner's Natural Resource Maps, giving milepost references, for each location where you are not satisfied with the degree of on-the-ground inventory.

RESPONSE: Additional on-the-ground inventory would be required in the following locations.

- Potential 2012 RTE-ACT042 S2/S3 on Sheet 18 between MM 145 & 146
- Potential 2012 RTE-ACT043 S2/S3 on Sheet 19 between MM 146 & 147
- Potential 2013 RTE-ACT 083 S2/S3 on Sheet 22, and between MM 188 & 189
- Potential 2012 RTE- AHS 044 S2/S3 Threatened on Sheet 23 between MM 205 & 206

As stated in my pre-filed testimony this would also include any or all of the following:

- Other areas where permission has been denied, if any.
- Areas where the pipeline has been re-routed, and it was too late in the season to conduct an inventory.
- Access roads that were not previously inventoried, if any.

(The above response was provided before Mr. Popp completed his review of the VGS 6/28/13 testimony)

Q.PET:ANR.1-41. With respect to your A8 to your testimony, how do you define the term "existing road" which would not require RTE survey for access?

RESPONSE:

An existing road would include any town, private, or farm road that is regularly utilized to access a home, barn, or farm field. It would not include a logging or woods road or a trail which may have intermittent or infrequent use.

Q.PET:ANR.1-42. With respect to your A9 to your testimony:

a. Identify the 6-20 populations of S2 plant species in the state.

b. Identify the 5 populations of S1 plant species in the state.

c. Define what you mean by "population."

OBJECTION: The question is vague and confusing and appears to misapprehend the testimony of Mr. Popp. Subject to and without waiving this objection, ANR provides the following;

RESPONSE:

A. To be ranked as S2 (rare) a plant species must occur in fewer than 20 populations in the state, but more than five.

B. To be ranked as S1 (very rare) a plant species must occur at fewer than 5 populations in the state.

C. A population is defined as a group of interbreeding individuals of the same species or individuals having at least the capability to interbreed. The Natural Heritage Inventory typically uses a distance of 1 kilometer to separate populations with some longer distances where, for example, a species occurs intermittently along a riparian system.

With respect to your testimony at A11 regarding shapefiles and inventory forms, admit that the requested information was provided by VHB to ANR on June 14, 2013.

RESPONSE: I received Rare Plant Forms and associated shapefiles on June 17th subsequent to submittal of my pre-filed testimony. Upon subsequent review I note that the information provided by VHB does not include information on the following elements:

- Potential 2012 RTE-ACT042 S2/S3 on Sheet 18
- Potential 2012 RTE-ACT043 S2/S3 on Sheet 19
- Potential 2013 RTE-ACT 083 S2/S3 on Sheet 22, and
- Potential 2012 RTE- AHS 044 S2/S3 Threatened on Sheet 23

I also noted the addition of a number of species that were not included in the Rare Species and Natural Community Report as follows:

- Fescue sedge (*Carex brevior*) Rare (S2)
- Fernald's sedge (*Carex merritt-fernaldii*) Very Rare (S1)
- Field thistle (*Cicium discolor*) Rare (S2)
- Smaller Forget-me-not (*Myosotis laxa*) Rare (S2), and
- Broad Beech fern (*Phegopteris hexagonoptera*) Rare (S2)

The information provided did not indicate the reason for the omission. If impacts to these species will be avoided by the project, that should have been indicated in the Report.

Q.PET:ANR.1-43. With respect to your testimony at A19:

a. Admit that the Project avoids direct impacts to threatened and endangered plant species with the possible exception of the Harsh sunflower. If denied, explain why denied, including the alleged impacts.

b. What specific avoidance or minimization are you referring to?

OBJECTION: As stated in the referenced testimony, the response can neither be admitted nor denied.

As stated in my pre-filed testimony "From the referenced rare species report it appears that there will be no direct impacts to any state listed (T or E) plant with the possible exception of Harsh sunflower, but there is insufficient information to provide any recommendations at present.

If there were an impact to the Harsh sunflower or any other listed species, and Endangered Species permit would be required. The Endangered Species permit would contain conditions approved by the ANR Secretary following review and recommendations from the Endangered Species Committee. In general, avoidance means averting impacts to the population by re-routing the pipeline, boring beneath the population, narrowing the impact area, or any other means available. Minimizing impacts would entail using the same or other measures to reduce the impact to the population.

Q.PET:ANR.1-44. With respect to your testimony at A20:

a. Have you concluded that the Project will result in destruction or imperilment to the habitat or species? If so, explain how and produce all documents supporting this conclusion.

b. Have you concluded that the Project will result in in economic, environmental, or recreational loss to the public from the destruction or imperilment of the habitat or species, and that this loss outweighs the economic, social, cultural, recreational, or other benefit to the public from the Project? Produce your analysis and all documents supporting your analysis.

c. Explain the basis for the five day limit on matting and produce all analyses and documents that support this limitation.

d. Cite each instance in which you have recommended that matting over rare plants

be limited to five days only, and with respect to each project, state whether the PSB or District Commission adopted your recommendation. Produce all documents relating to same.

e. Admit that neither the PSB or ANR placed restrictions as to duration of matting in the VELCO NRP, Lamoille and East Avenue Loop Projects.

f. Explain how matting in place longer than 5 days would have an undue adverse impact on rare plants or wetland functions and values and produce all documents supporting your conclusion;

g. Define "immediately" as that term is used on line 3 of page 10.

RESPONSE:

a. I remain unable to provide specifics regarding destruction or imperilment to the state listed harsh sunflower since information about the magnitude of any impact has not been provided to me. The ANGP RTE Plant Species and Significant Natural Communities Impact Analysis, dated June 27th provides updated information on rare plants that was not available at the time that my pre-filed testimony was submitted. The subsequent information notes that there will be a significant impact (greater than 20% of the population affected) to only three populations of rare plants. All three populations are of the same rare species, Three-leaved Rattlesnake root (*Nabalus trifoliolatus*) leading to an even greater cumulative impact to this species. For rare plants we consider impacts to more than 20 % of a given population to be adverse and undue and request mitigation to ensure their continued survival as a viable population. There may be additional impacts due to matting covering rare plant populations for an extensive period during the growing season.

b. OBJECTION: Calls for a legal conclusion. Subject to and without waiving this

objection, ANR provides the following;

RESPONSE: If there is an undue or adverse impact to any Rare, Threatened, or Endangered plant this will result in environmental harm. Each of these species is already rare in the state and any further decline will be a loss of biological diversity in the state and a loss to the state's natural heritage. We would consider any impact to a state listed species to be adverse and any impact exceeding 20% of the population of a rare plant to be adverse.

c. RESPONSE: While covering R,T,E plants with mats is preferable to running equipment directly over the plants, it still causes harm to the plants. This is primarily a result of loss of photosynthetic capacity for the duration of the time beneath mats. Depending upon the species and its morphology, there is also some degree of flattening of the plants and some soil compaction from the matting. Our concern is limited to R,T,E plants which by definition are limited in the state often because they are poor competitors or have limited habitat. The loss of photosynthetic capacity and the flattening are the issues of greatest concern, and these are ameliorated either by restricting the mats to the dormant season or by limiting the amount of time they are in place.

d. We requested that matting be restricted to five consecutive days during the growing season for the VT Gas Franklin County expansion where it impacted the rare Awned sedge (*Carex atherodes*) population. For the VT Gas Franklin Co. expansion a compromise was reached as reflected in the attached MOU. For its part VT Gas agreed to reduce the width of the impact area within the sedge population and to not commence work there until near the end of the growing season, namely Sept 15th. In addition, the plant in question with the Franklin Co. expansion, awned sedge, is known to spread vigorously by stolons and rarely produces fruits or flowers so the longer matting, especially at the very end of the growing season, was less of a concern.

e. OBJECTION: The question does not seek an admission to statements or opinions of fact

or of the application of law to fact and therefore a response is not required. If a response is required it is DENIED.

f. OBJECTION: Cumulative and Duplicative, see question c above.

g. I cannot put a specific distance on the term "immediately adjacent" in the context of "…all R,T,E populations within and immediately adjacent to the construction area should be monitored". Instead, immediately adjacent would include all R,T,E plants growing within the temporary or permanently cleared areas, and extending 50 ft. on either side of these areas. However, in the context of inventorying the VGS line prior to brush hogging, areas with R,T,E plants within 100 ft of the cleared ROW should be searched since plants are more likely to spread into artificially maintained openings.

Q.PET:ANR.1-45. With respect to your testimony at A21:

a. Explain the basis for your conclusion that soil segregation when trenching may not be sufficient to ensure the water hemps survival and produce all documents supporting same and describe all experience supporting same, with specific project references.

b. Produce a copy of all completed Vermont Rare Plant Forms and attached documentation for each of the rare plans listed in A17 of your testimony.

a. See testimony and response to question 21. I have no direct experience with the effects of trenching on an annual plant where persistence of the seedbank within the soil and the restoration of precise conditions required for germination are mandatory for its continued survival. Top soil segregation may indeed be sufficient for maintaining the existence of the water hemp population, but if it is not, I requested that there be a supply of seeds available to restore the population or to augment it if the activity results in a decline.

b. OBJECTION: The question is vague and confusing. Question 1-42 asks whether ANR has received the Vermont Rare Plant Forms and Associated files from VG. ANR has received this information from VG. Accordingly, VG has access to or is in possession of these files.

Interrogatories for Alan Quackenbush

Q.PET:ANR.1-46. Regarding A8, please indicate whether ANR is in agreement with Petitioner's proposed wetland classifications.

RESPONSE: Yes, our initial determinations are in agreement.

Q.PET:ANR.1-47. Regarding A11, admit that many of the wetlands along the pipeline alignment are currently cleared, and thus in these already cleared areas the project will not change existing vegetative conditions on a permanent basis.

OBJECTION: The question is vague and confusing and contains uncertain terms that have subjective or undefined meanings, for example, "many." If an answer is required, it is DENIED.

Q.PET:ANR.1-48. Regarding A15 to your testimony, please define the "realignment" that is being referred to.

RESPONSE: The realignment refers to the original available alternative proposed in December 2012.

Q.PET:ANR.1-49. Admit that the DEC Wetlands Program had specific wetland classification questions for VHB that were answered by VHB via letter addressed to you, dated April 5, 2013.

Objection, vague and confusing uncertain what is meant by specific wetland classification questions. Admit that VHB provided a letter to ANR responding to specific classification questions. The letter says what it says.

Q.PET:ANR.1-50. Regarding A16 to your testimony, admit that you were invited to and planned to attend a site visit with other Agency and VHB staff on May 15, 2013 during which most areas of alignment change between the 12/20/12 alignment and 2/28/13 alignment were field evaluated.

RESPONSE: Admitted in part and denied in part. I was invited to attend, but could not attend.

Q.PET:ANR.1-51. Have you or the DEC wetlands staff started any review of the VWP application? Please describe the status of your review and the date by when you expect to complete the review. If you believe the VWP application is incomplete, please itemize the information required to complete the package and the number of weeks it will take you to complete the review once you have received the missing information you have itemized.

RESPONSE: We have started review of the project. According to VHB, more information is being provided. We cannot make a determination as to completeness until all information is submitted.

Q.PET:ANR.1-52. Admit that Petitioner has noticed ANR and the Board that it is seeking a 248 in this proceeding in the fall of 2013 and the VWP and 401 Certification by January, 2013 (See Exhibit Supp. JAN-3 (2/28/13). When do you expect to provide the Board with an opinion about Project impacts on wetlands?

OBJECTION: The multi-part question is vague and confusing and it is uncertain whether all or only part of the question is a request to admit. Moreover, the question contains some typos or

other inaccuracies that made a response difficult or impossible. If a response is required it is DENIED. Admit that Petitioner is seeking a Certificate of Public Good from the Public Service Board and a VWP and a 401 Certification from ANR. RESPONSE: The Agency is reviewing the supplemental information recently provided by Petitioner in its 6/28/13 filing. Depending on the sufficiency of the additional information Petitioner has provided, and the progress of the coordination with the Army Corps of Engineers, the Agency may provide an update to the Board as part of ANR's rebuttal filing on the status of the permit application and our review of Project's impacts on wetlands.

Q.PET:ANR.1-53. With respect to your testimony at A17:

a. Identify and produce provide a list of all other VWP applications for which the Agency has required an applicant to provide locations of blasting activities.

OBJECTION: The interrogatory is overly broad and not reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving this objection, ANR provides the following:

RESPONSE: I am not aware of other VWP applications that required this information.

b. Provide a list of all other VWP applications involving any type of directional bore, for which the Agency has required an applicant to provide "the depth of the bore and whether it will go through bedrock deep peat, muck or clay."

OBJECTION: The interrogatory is overly broad and not reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving this

objection, ANR provides the following:

RESPONSE: Vermont Gas has provided such information for borings under the Lamoille and Missiquoi Rivers. Vermont Gas also provided this information for the Enosburg distribution project by its contactor during the on-site review of the project.

Q.PET:ANR.1-54. Regarding A19 of your testimony, please specifically indicate what field information the Agency is currently not in receipt of or has not confirmed.

RECEIPT: In addition to the gaps in the field inventory for the access roads and the project corridor outlined in the rebuttal testimony and exhibits, we are expecting receipt of more information based on an e-mail from VHB on 7/2/2013.

Q.PET:ANR.1-55. With respect to your testimony at A20, identify specifically each location, with reference to the Natural Resource Maps and mileposts, those locations that you believe VGS should re-examine the line and identify specifically the locations adjacent to roads where you suggest the pipe be relocated.

RESPONSE: See my testimony and the testimony of Eric Sorenson. In general, where significant wetlands are also considered Rare and Irreplaceable Natural Areas. Specifically, this would apply to the Parks Hurlburt Road in Monkton and North Street in New Haven.

Q.PET:ANR.1-56. Produce all documents, including notes, field notes, and emails, relating to

ANR's assessment of the project's potential wetland and natural community impacts.

OBJECTION: The information seeks privileged attorney client communication. Non-privileged information not already produced by VG will be produced.

Q.PET:ANR.1-57. With respect to your testimony at A24:

a. Identify the dates of bird breeding habitat, broken down by species, during which construction should be avoided.

RESPONSE: The response requires coordination with Fish and Wildlife staff and a response could not be provided by the discovery deadline. ANR will supplement its response.

b. Does this recommendation apply to endangered birds only or to all breeding birds?

RESPONSE: The recommendation is not limited to endangered birds. The recommendation, however, applies to wetland-dependent species.

c. If the recommendation is to all breeding birds, explain the basis for the recommendation and produce all documents supporting same.

RESPONSE: See previous response. The recommendation is not for all breeding birds, but for wetland dependent species.

d. Provide habitat mapping, by species, where the planned construction route will interfere with the bird's breeding periods.

RESPONSE: If such instances are identified during Agency review of the application,

we will provide this information.

e. Identify a single 248 order that has required a project to avoid construction during bird breeding season.

RESPONSE: See Seneca Mountain Wind, Docket No. 7867. Also VT Gas Systems, Inc. Individual Wetland Permit #2012-074 contains this limitation.

f. Do you agree that the PSB should consider the schedule and cost impacts that such a restriction may have upon the project and completion of the project to provide service to Addison country residents? If not, why not?

OBJECTION: Objection calls for a legal conclusion. The PSB must determine whether the project will result in an undue adverse impact to the natural environment. To satisfy this standard, the applicant must demonstrate that the project will not result result in an undue adverse impact to the functions and values of the wetlands. The scheduling restrictions are needed to avoid or minimize the habitat functions of the wetland.

g. Describe how construction during bird breeding season would result in an undue adverse impact to birds, describe the impacts caused, and produce all documents supporting same.

RESPONSE: Construction during the breeding season in nesting areas could physically remove or destroy nests; deter use of nesting sites; and dislocate nesting bird.

Interrogatories for Jenna Calvi

Q.PET:ANR.1-58. With respect to your testimony at A10:

a. Admit that VGS supplied DEC with supplemental stormwater and EPSC plans on May 3, 2013.

OBJECTION: The question contains some ambiguity in the order and use of terms. Subject to this objection, Admit that Vermont Gas Systems, Inc. supplied DEC with supplemental Stormwater application materials and EPSC plans on May 3, 2013.

b. Have you begun any technical review of the applications and plans and if so, please indicate the timing of the technical review, including the anticipated completion date. If the application is incomplete, please itemize the missing information required for you to complete your review and the number of weeks it will take you to complete the review once you have received the missing information you have itemized.

RESPONSE: As of June 25, 2013, I have completed a technical review of the application and EPSC plans, and have generated technical comments for the applicant. These were submitted to the applicant's consultant, Vanasse Hangen Brustlin, Inc., on July 8, 2013. The current status of the project is pending response from the Applicant. Once I receive the response to these comments and requests, I will review any of the additional materials and information provided.

c. When do you plan to provide the Board with an opinion about Project impacts?

OBJECTION: The question does not accurately represent the testimony of the witness or the scope of the stormwater review. Subject to and without waiving this objection, ANR submits the following:

RESPONSE:

Depending on the sufficiency of the additional information Petitioner provides, the Agency/Stormwater Program may provide an update to the Board as part of ANR's rebuttal filing on the status of the permit application and our review of the areas of disturbance and the proposed prevention and the prevention and control measures for the project construction.

Interrogatories for Jeff Merrell

Q.PET:ANR.1-59. Please produce all documents, including emails, on which you relied to support your testimony.

RESPONSE: My testimony relied upon my educational background, and the experience, knowledge and training gained during my thirteen years working for the Agency of Natural Resources. It also relied upon data and information available from the U.S. Environmental Protection Agency and the reports and scientific research referenced below (see RESPONSES to Q.PET:ANR.1-2 and Q.PET:ANR.1-6).

Q.PET:ANR.1-60. Identify and produce each GHG lifecycle analysis for natural gas that you have reviewed.

RESPONSE: I have reviewed the following natural gas life-cycle analyses:

1. http://www.wri.org/publication/clearing-the-air
2. http://www.netl.doe.gov/energy-analyses/pubs/NG-GHG-LCI.pdf
3. http://www.nyc.gov/html/planyc2030/downloads/pdf/nyc_combined_natural_gas_report.pdf
4. http://vtbio.org/bioheat_impact_files/GHG%20Resource%20Analysis%20for%20residential%20Boilers%20-%20%20Final%20Report%20-%209-7-08-1.pdf

http://www.worldwatch.org/system/files/pdf/Natural_Gas_LCA_Update_082511.pdf

Q.PET:ANR.1-61. With respect to your testimony at page 6, lines 5-7, have you prepared "such a 'sensitivity analysis'" for this project, and if so, please produce. If not, why not?

RESPONSE: I have not conducted a sensitivity analysis specific to this project. My testimony indicates the importance of such an analysis and identifies several key parameters. A meaningful sensitivity analysis requires the use of a realistic range of assumptions, many of which would've needed to be provided by the Petitioner.

Q.PET:ANR.1-62. With respect to your testimony at page 6, lines 17-18, have you conducted such a "comprehensive 'life cycle analysis'" for this project, and if so, please produce. If not, why not?

RESPONSE: I have not conducted a comprehensive life-cycle analysis for this project. A meaningful life-cycle analysis requires the use of realistic assumptions and data associated with

key parameters, many of which are identified in my testimony. Again, the Petitioner would be in a more favorable position to identify and make known many of these assumptions that would facilitate conducting a life-cycle analysis (e.g., the source of the fuel, leakage rates associated with the specific source, etc.).

Q.PET:ANR.1-63. With respect to your testimony at page 7, lines 4-7, have you ever conducted a GHG life cycle analysis for greenhouse gas emissions for natural gas/and or fuels? If so, please produce all such analyses.

RESPONSE: I am very familiar with the process of conducting GHG life-cycle analyses for various fuels, but have never generated a complete life-cycle analysis

Q.PET:ANR.1-64. With respect to your testimony at A17, identify and produce all of the "scientific studies" referenced at page 8, lines 10-14.

RESPONSE: A hyperlink was provided in my testimony to the World Resources Institute (WRI) report entitled "Clearing the Air". The "Other recent scientific studies" I alluded to on page 8 lines 12-14 can be downloaded at the following hyperlinks:

http://www.pnas.org/content/early/2012/04/02/1202407109.full.pdf+html

http://www.nature.com/news/air-sampling-reveals-high-emissions-from-gas-field-1.9982

http://assets.climatecentral.org/pdfs/NaturalGas-and-ClimateChange.pdf

Q.PET:ANR.1-65. Admit that the project will increase opportunities for utilization of

biomethane in Addison County. If denied, explain why and produce all documents supporting your response.

OBJECTION: The witness can neither admit nor deny the request as he lacks sufficient information to form a response. To the extent a response is required, it is DENIED.

Q.PET:ANR.1-66. Admit that the Environmental Protection Agency recently revised its methodology for calculating lifecycle greenhouse gas emissions resulting in an annual average decrease in methane emissions from natural gas systems of over 20%. If denied, explain why and produce all documents supporting your response.

OBJECTION: As written a response cannot be provided to the request. The question conflates several principles as discussed below. To the extent a request is required admitted in part and denied in part as further explained.

RESPONSE:

The question is somewhat unclear and appears to conflate concepts. Firstly, the U.S. Environmental Protection Agency (EPA) did revise its emissions estimates for natural gas systems in the most recent Inventory *of U.S.Greenhouse Gas Emissions and Sinks: 1990-2011* which was released in April 2013. When comparing the US EPA April 2013 release with a prior inventory released in April 2012, it is evident that EPA's methane emissions estimates associated

with natural gas systems were adjusted downward in the April 2013 report relative to the April 2012 report for each year by between 15% and 33%. Averaging the emissions estimate adjustments for all years in the report yields an overall average downward adjustment of 23%.

However, this downward adjustment does not change the fact that the April 2013 report indicates an increase in CH4 emissions from natural gas systems between 2010 and 2011. Also according to the EPA: *"Natural gas systems were the largest anthropogenic source category of CH4 emissions in the United States in 2011 with 144.7 Tg CO2 Eq. of CH4 emitted into the atmosphere. Those emissions have decreased by 16.5 Tg CO2 Eq. (10.2 percent) since 1990. The decrease in CH4 emissions is due largely to a decrease in emissions from transmission and storage due to increased voluntary reductions and a decrease in distribution emissions due to a decrease in cast iron and unprotected steel pipelines. Emissions from field production accounted for approximately 37 percent of CH4 emissions from natural gas systems in 2011. CH4 emissions from field production decreased by 12 percent from 1990 through 2011; however, the trend was not stable over the time series-emissions from this source increased by 43 percent from 1990 through 2006, and then declined by 38 percent from 2006 to 2011. Reasons for this trend include such factors as increased voluntary reductions, as well as the effects of the recent global economic slowdown*."

(source: http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2013-ES.pdf , page ES-13). The previous (April 2012) release can be found at: http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2012-Main-Text.pdf.

Secondly, this EPA inventory is not necessarily a life-cycle inventory of GHG emissions, as it only includes emissions associated with natural gas system components operating within the boundaries of the U.S.

Dated at Montpelier, Vermont this 12th day of July, 2013

As to Objections

VERMONT AGENCY OF NATURAL RESOURCES.

By: _____
Judith L. Dillon

cc: Certificate of Service